

## Claims

1. A rechargeable, alkaline battery including an anode electrode, a cathode electrode, said electrodes being separated by a stack of hydrogen permeable regenerated cellulose films.
2. A battery according to Claim 1 in which at least one of the films contains a dispersion of salt particles.
3. A battery according to claim 2 in which the stack includes at least 2 regenerated cellulose films and the films include domains permeable to hydrogen gas.
4. A battery according to claim 3 in which the anode electrode contains zinc and one of the regenerated cellulose films contains a dispersion of copper salt particles.
5. A battery according the Claim 4 further including a film of regenerated cellulose containing a dispersion of particles of metal sulfide that react with copper ions to form copper sulfide.
- 20 6. A battery according to claim 3 in which the cathode electrode contains silver and one of the regenerated cellulose films contains a dispersion of a fluoride salt particles.
- 25 7. A battery according to Claim 1 in which the stack of regenerated cellulose films further includes at least one hydrogen permeable layer of hydrocarbon polymer.
8. A battery according to Claim 7 containing 1-5 layers of the hydrocarbon polymer.
9. A battery according to Claim 2 in which the stack contains at least one hydrogen-permeable regenerated cellulose film absent salt particles.

10. A battery according to Claim 9 in which the regenerated cellulose film absent salt particles is disposed between the copper salt containing regenerated cellulose film and the anode.

5 11. A battery according to Claim 5 in which the copper salt containing regenerated cellulose film is disposed between the metal sulfide salt containing regenerated cellulose film and the fluoride salt particles containing regenerated cellulose film.

10 12. A battery according to Claim 8 in which a layer of hydrogen permeable hydrocarbon polymer is disposed between the copper salt containing regenerated cellulose film and the metal sulfide containing regenerated cellulose film.

15 13. A battery according to Claim 8 in which the hydrocarbon polymer is a polyalkylene of a monomer containing 2-8 carbon atoms.

20 14. A battery according to Claim 13 in which the hydrocarbon polymer is selected from the group consisting of polyethylene and polypropylene.

15. A battery according to Claim 1 in which the films have a thickness from 10 to 250 microns.

25 16. A battery according to Claim 3 in which the regenerated cellulose film contains from 10 to 80 parts by weight of the hydrogen permeable domains based on 100 parts of regenerated cellulose.

17. A battery according to Claim 16 in which the domains comprise a cellulose ether.

30 18. A battery according to Claim 17 in which the ether is ethyl cellulose.

19. A battery according to Claim 6 in which the regenerated cellulose film adjacent the cathode contains a

dispersion of a fluoride salt have a solubility of from 10 $\mu$ g/ml to 10mg/ml.

20. A battery according to Claim 4 in which the copper salt has a solubility from 10 $\mu$ g/ml to 10mg/ml.

5 21. A battery according to Claim 5 in which the metal sulfide has a solubility of less than 1 $\mu$ g/ml.